CLAIMS

1. A process for the make-up of a catalyst in a reactor suitable for reactions which take place in three-phase systems according to the Fischer-Tropsch technique, to compensate losses (in activity and material) during the overall production cycle, which comprises:

a) incorporating the catalyst, previously reduced in a matrix of paraffinic waxes, solid at room temperature;

b) melting and collecting the paraffinic matrix (7) in a vessel (C), maintained at a high temperature, together with a diluent (8) which is miscible with the molten paraffinic matrix and which is in liquid form both under the conditions present in the vessel and at room temperature, a stream of inert gas (3') being distributed in said vessel (C) from the bottom so as to obtain a sufficiently homogeneous suspension;

c) pressurizing the vessel (C) in which the complete melting of the paraffinic matrix has been effected at a pressure higher than that of the conditioning reactor (D) maintaining the system fluidized by the continuous introduction of inert gas (3') from the bottom of said vessel (C);

d) transferring, due to the pressure change, the diluted solution (9) from the vessel (C) under pressure to the reactor (D), initially empty, maintained at a tempera-

ture higher than or equal to that present in the vessel (C) and flushed in turn from the bottom with inert gas (5');

e) regulating the temperature and pressure in the reactor (D) at values ranging from 200-230°C and 0.5-1.5 MPa;

f) gradually substituting the inert gas (5') with synthesis gas (6') up to a concentration of inert gas ranging from 5 to 50% by volume and maintaining a partial water pressure (co-product of the Fischer-Tropsch synthesis reaction) lower than 1.0 MPa;

g) maintaining the conditions of point (f) for 24-72 hours;

h) gradually increasing the pressure inside the reactor (D) to a value higher than the pressure of the reactor (B);

i) gradually reducing the concentration of inert gas to zero;

j) gradually increasing the reaction temperature until reaching values ranging from 200 to 350°C;

k) after completing the conditioning phase, transferring (10) the suspension from the reaction vessel (D) to the main reactor (B), which is running under normal operating conditions, by means of a pressure change.

2. The process according to claim 1, wherein the catalyst is englobed in paraffinic waxes in the form of pellets

wherein the quantity of wax ranges from 30 to 70% by weight.

3. The process according to claim 1 or 2, wherein the catalyst comprises Co dispersed on a solid carrier consisting of at least one oxide selected from one or more of the following elements: Si, Ti, Al, Zr, Mg and their mixtures.

4. The process according to claim 3, wherein the cobalt is present in the catalyst in quantities ranging from 1 to 50% by weight with respect to the total weight.

5. The process according to any of the previous claims, wherein the catalyst is used in the form of a finely subdivided powder, with an average diameter of the granules ranging from 10 to 250 μm.

6. The process according to any of the previous claims, wherein the catalyst englobed in the paraffinic matrix is brought to a temperature which is greater than or equal to 150°C and diluted with a diluent liquid at those temperatures, and also at room temperature, until a concentration of solid ranging from 10 to 50% by weight, is obtained.

7. The process according to claim 6, wherein the diluent consists of an oligomer of C_6-C_{10} α-olefins.

8. The process according to any of the previous claims, wherein the pressure in the charging vessel (D) is higher than that present in the reactor (B) by about 0.2-0.4 MPa.

9. A process for the shut-down of a reactor (B) in which

reactions take place in multiphase systems according to the Fischer-Tropsch technology, wherein a gaseous phase, prevalently consisting of CO and H_2, is bubbled into a suspension of a solid in the form of particles (catalyst) in a liquid (prevalently reaction product), which comprises the following operating phases:

i. gradual stoppage of the feeding of synthesis gas (6) and its gradual substitution with inert gas (5);

ii. possible reduction of the operating pressure and temperature present inside the reactor (B);

iii. discharging (4) of the suspension contained in the reactor (B) and in the units associated therewith (E), and its recovery in the vessel (A) heated and flushed with inert gas (3), wherein the transfer is effected by means of the difference in pressure, the vessel (A) having been previously brought to a pressure at least 3 bars lower than the reactor (B).

10. The process according to claim 9, wherein the vessel (A) is designed to have a capacity which is such as to contain the volume of suspension present in the reactor (B) and in the other units (E), associated with the treatment of the suspension, at the moment of shut-down.

11. A process for the running of a temporary shut-down

phase (stand-by) of a reactor (B) wherein reactions are effected which take place in multiphase systems according to the Fischer-Tropsch technology, wherein a gaseous phase, prevalently consisting of CO and H_2, is bubbled into a suspension of a solid in the form of particles (catalyst) in a liquid (prevalently reaction product), which comprises:

1. gradual stoppage of the feeding of synthesis gas (6) and gradual substitution with inert and/or reducing gas (5) to keep the solid phase dispersed in the suspension;
2. optional decrease in the operating temperature and pressure.

12. The process according to claim 11, wherein the reactor (B) is kept on-line with the treatment section of the suspension (E) which is completely recycled (11) and (12), to the reactor without the extraction of products.

13. The process according to claim 11, wherein the reactor (B) is taken off-line from the units (E) after emptying the suspension from the equipment (E) directly connected to the reactor (B).

14. The process according to claim 13, wherein the reactor (B) has a capacity which is such as to also contain the volume of suspension present in the units (E) at the moment of temporary shut-down.